

On two new Terrestrial Isopods from Madagascar. By WALTER E. COLLINGE,
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(PLATE 9.)

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I. INTRODUCTION.

FOR the privilege of examining the very interesting specimens of Terrestrial Isopods here described, I am indebted to the kindness of my friend Dr. W. T. Calman, of the British Museum (Natural History). The material was collected in Madagascar in 1911 by the Hon. Paul A. Methuen.

There is a single specimen referable to the genus *Alloniscus*, Dana, not hitherto described, remarkable for its great size; and a further very interesting new species, for the reception of which I have constituted a new genus, to which I have given the name of *Calmanesia* in honour of Dr. W. T. Calman.

II. THE ISOPODEAN FAUNA OF MADAGASCAR.

Very little attention has been paid to the Terrestrial Isopods of Madagascar. Budde-Lund (3) has described certain species in the collection of the Berlin Museum. Dollfus (8) in 1889 described the *Porcellio cristatus*, placed by Budde-Lund in the genus *Lyprobius* and later in the genus *Nagara*. The same author in 1895 (9) described a further series of species, amongst which

there were four new species of *Alloniscus*; these Budde-Lund placed in a new genus, *Diacara*, for reasons which are not altogether clear; there are certainly slight differences in the form of the uropods, but these are scarcely sufficient to warrant generic distinction. In 1908 (4) Budde-Lund published his memoir on the Isopoda of Madagascar and East Africa, in which he described and partly figured nine further new species, re-describing and partly figuring other known forms. No figures, however, are given of *Periseyphops praconius* and *Armadillo horridus*. According to this author, there are known from Madagascar thirty-two species referable to twenty genera.

If, as is generally supposed, Madagascar represents a part of a great submerged southern continent, then we should expect to find representatives of South-Eastern and South-Western genera, but whether owing to long isolation these forms have changed or died out, it is remarkable that the bulk of the known forms show affinities rather with Northern forms than with Southern ones, and they further seem to have little relationship with the South African genera. Hitherto no genus has been found peculiar to Madagascar; the new genus *Calmanesia*, here described, is therefore of more than usual interest. Until, however, we know much more of the fauna of this island, it is futile to speculate.

III. DESCRIPTION OF *ALLONISCUS NACREUS*, sp. nov.

ALLONISCUS, *Dana*.

This genus as yet is only imperfectly understood, and the members are subject to a wide range of variation. It occurs in North and South America, India, Siam, the Malay Peninsula, South Africa, Sumatra, Java, and the Maldive, Hawaiian, Nicobar, and Celebes Islands. *Arhina*, Collge. (6) is a closely-allied genus from India.

Of the twenty-one described species of *Alloniscus*, seven are known to occur in Madagascar, viz.: *A. alluaudi*, Dollf., *A. elegans*, Dollf., *A. guttatus*, Dollf., *A. tigris*, Dollf., *A. brevis*, Budde-Lund, *A. pallidulus*, Budde-L., and *A. pigmentatus*, Budde-L.

ALLONISCUS NACREUS, sp. nov. (Pl. 9. figs. 1-12.)

Body broadly oval, strongly convex, irregularly pitted, finely sculptured on each side of the mesosome. Cephalon (figs. 2 & 3) medium size, convex above, frontal margin distinct, lateral lobes small; epistome slightly depressed, with prominence between the antennæ. Eyes oval, dorso-lateral. Antennulæ (fig. 4) small, curved, and 3-jointed, the terminal joint with a number of bristle-like setæ on the inner side. Antennæ (fig. 5) short, joints gradually enlarging from the 1st to 4th, 5th joint elongated and more

slender; flagellum 3-jointed, with short terminal style. First maxillæ (fig. 6): outer lobe terminating in four stout spines and six smaller ones, with stout setæ on the outer margin of the appendage. Second maxillæ (fig. 7) thin and plate-like, with terminal bifurcation, densely setose. The segments of the mesosome are strongly convex and finely pitted, with lateral sculpturing; pleural plates with terminal margin more or less truncate, posterior margin of the 5th, 6th, and 7th slightly produced backward. Maxillipedes (fig. 8) rather narrow; outer lobe 3-jointed, with two spines on the first joint, two tufts of spines on the second, and a single terminal tuft on the third; the inner lobe is somewhat conical and surmounted with numerous small setæ. Appendages of mesosome (fig. 9) stout and strongly spinous. Metasome comparatively small, segments 3-5 with pleural plates directed backward and inwards. Uropoda (figs. 10 & 11) short, extending beyond the telson, basal plate sparsely covered with setæ; exopodite sickle-shaped; endopodite slender, terminating in three long setæ. Telson (fig. 12) triangular, lateral margins slightly rounded, apex subacute, with slight depression above.

Length 19 mm.

Colour (in alcohol) creamy white.

Hab. Tamatave, East coast of Madagascar (*Herschell & Chauvin*).

This fine species is the largest member of the genus yet described. Apart from this feature, it conforms with the essential characters of the genus.

IV. DESCRIPTION OF THE GENUS *CALMANESIA*.

CALMANESIA, gen. nov.

Body oblong-oval, capable of partly rolling into a ball. Segments of mesosome and metasome with a series of long-jointed spines. Cephalon with lateral and median lobes. Antennulæ very small. Antennæ elongated; flagellum 2-jointed. Pleural plates, excepting those of the first segment, drawn out into a long spinous process. Uropoda small and without endopodites. Telson short and obtuse, not extending beyond the uropoda.

CALMANESIA METHUENI, sp. nov. (Pl. 9. figs. 13-25.)

Body oblong-oval, covered with elongated jointed spines. Cephalon (figs. 14 & 15) short, slightly convex dorsally, frontal margin distinct, with lateral and median lobes; seven spines on the dorsal surface; epistome slightly convex. Eyes situated dorso-laterally, facets few and large. Antennulæ (fig. 16) small, 3-jointed, middle joint very small. Antennæ (fig. 17) elongated, 1st joint small, 2nd and 3rd larger, 4th and 5th greatly elongated; flagellum 2-jointed, distal joint rather longer than the proximal one, with terminal bunch of setæ. First maxillæ (fig. 18): outer lobe with six short

spines, of which the outermost is the largest and has a short, stunted tooth-like body at its base; on the inner side is a single needle-like spine; densely setose on the outer margin; inner lobe small, with two elongated setose spines terminally. Second maxillæ thin and plate-like, setose terminally. Segments of the mesosome strongly arched, the 1st with eleven jointed spines and the remainder with seven; pleural plates, excepting those of the 1st segment, produced into long spinous processes. Maxillipedes (fig. 19) somewhat robust; outer lobe 3-jointed, with two straight spines on the 1st joint, four on the 2nd, and one small one on the outer border of the 3rd joint, which latter terminates as a blunt process surmounted by a number of setæ; inner lobe plate-like, with two small tooth-like spines and a single straight spine on the ventral face. Appendages of the mesosome (fig. 20) comparatively short. Segments of the metasome crowded together, 3rd, 4th, and 5th each with two jointed spines in the mid-dorsal line; pleural plates greatly elongated, directed backward and terminating in a finely drawn out spine. Uropoda (fig. 24) extending beyond the telson, basal plate oval-shaped, with a single appendage (exopodite) which terminates in a strong curved spine. Telson (fig. 25) somewhat triangular in shape, terminally obtusely pointed, with two 3-jointed spines and a small median papilla in front of these.

Length 10 mm.

Colour (in alcohol) creamy white with dark chocolate-coloured markings. Younger forms creamy white.

Hab. Forest of Folohy, East Madagascar, 1911 (*Herschell & Chauvin*); Analamazotra, Eastern Forest, June 1911. Under rotten logs (*P. A. Methuen*). The specimens from the latter locality are evidently immature.

a. *General Form.*—This is undoubtedly one of the most handsome and peculiar Terrestrial Isopods known, rivalling in both form and colour any species hitherto described. The long-jointed spines covering the mesosome and metasome and the drawn-out spinous pleural plates give the animal the appearance of some Coleopterous larva rather than a Crustacean.

There is, I think, little doubt but that the members of this genus are capable of rolling themselves up into a ball like the Armadillidiidæ. Apart from the fact that one specimen was found (in alcohol) so rolled up, the extreme mobility of the segments support such a view.

The remarkable jointed spines on the body would seem to be a hitherto undescribed character in the Isopoda. I have been unable to find any reference to such in the literature on these Crustaceans. So far as I can make out from the material available, the spines first appear as small excrescences on the surface of the segments (fig. 23, *a*); these increase in size and later appear as ordinary spinous processes (fig. 23, *b*); a little later they continue to grow, a distinct joint forming at the base of the first period of growth (fig. 23, *c*), and this continues until, with the exception of those

on the cephalon and telson, where the spines are 3-jointed, they become 4-jointed, the longest measuring 6.5 mm. (fig. 21). All the spines are covered with minute scales like the rest of the body (fig. 22). There are seven spines on the cephalon, eleven on the first mesosomatic segment, seven on the second to seventh segments, and two on each of the last three metasomatic segments and the telson.

b. *The Cephalon*.—This is extremely narrow from before backwards and slightly convex. Anteriorly there is a well-marked marginal ridge which laterally develops into the two lateral lobes, and in the middle into the median lobe. Posteriorly the margin is deeply excavate, and from the middle line a strong spine arises; lateral to this there are a pair of spines on each side, and a single one on each side, slightly nearer the centre, in front of the former. All of these spines are 3-jointed. The epistome is slightly convex dorsally and distinctly so ventrally, whilst laterally the sockets for the articulation of the antennæ stand out as conspicuous bodies.

1. *The Eyes* are placed dorso-laterally; they are of medium size and with few but large facets.

2. *The Antennulæ* (fig. 16) are small, and consist of an elongated basal joint, a tiny ring-like middle joint, and a gradually tapering terminal one. At the distal end of the third joint and on the inner side are two blunt papillæ.

3. *The Antennæ* (fig. 17) are greatly elongated. The first joint is small, and the second about two and a half times as long, the third is still longer and narrower, whilst the fourth and fifth are almost coequal and nearly as long as the second and third together. All the segments are covered with minute setæ. The flagellum is 2-jointed, the distal joint being rather longer than the proximal one, and terminates in a bunch of elongate setæ.

4. *Oral Appendages* (figs. 18 & 19).—These afford very little assistance in placing this genus and species. The 2nd maxillæ and the maxillipedes are of the usual type. The 1st maxillæ in the form of the first tooth of the outer lobe differs somewhat from any other genus.

c. *The Mesosome*.—The segments of the mesosome are strongly arched. There are eleven jointed spines on the first segment and seven on the remainder.

1. *The Pleural Plates* of the first segment are broad plate-like bodies with rounded anterior and posterior angles; anteriorly they bound the postero-lateral half of the cephalon. Those of segments 2-4 are somewhat triangular in shape, the apex of the triangle being drawn out in a fine curved spine; the whole of the plate is curved, the free spinous end bending upward. On segments 5-7 the plates terminate more abruptly before the commencement of the spine, and they are rather flatter.

2. *Appendages*.—The walking limbs are comparatively short, and of a less robust type than in most genera of Oniscidæ.

d. *The Metasome*.—The segments of the metasome are crowded together, the 1st and 2nd being scarcely visible in a dorsal view and without pleural plates. Of the remaining three the last is the smallest. The pleural plates are of a similar type to those of the last three metasomatic segments. There are a pair of jointed spines on each of the last three segments.

1. *Uropoda*.—The uropoda extend beyond the telson. The basal plate is somewhat oval in shape and has a fold on its posterior side. Only a single appendage appears to be present, which is slightly longer than the width of the basal plate and terminates in a strong curved spine. I take this appendage to represent the exopodite.

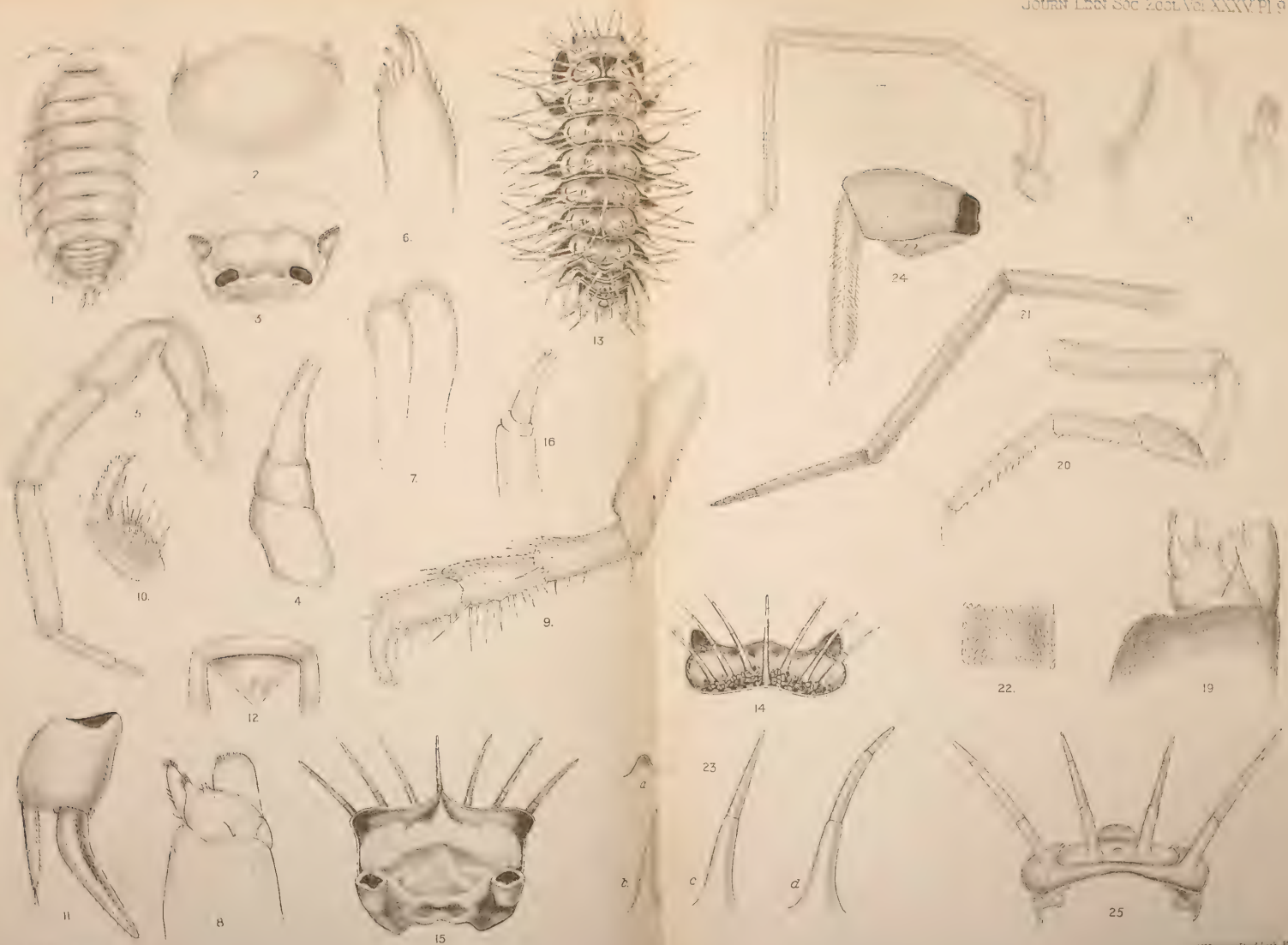
2. *Telson*.—The telson is comparatively small, somewhat triangular in shape, and terminating in an obtuse point. It bears a pair of 3-jointed spines and a median papilla anteriorly and between the bases of the spines.

V. AFFINITIES.

The genus *Calmanesia* appears to be widely separated from any known genus, and at present we must leave it without attempting to relegate it to its proper position in the classification.

BIBLIOGRAPHY.

1. BRANDT, J. F.—Conspectus monographiæ Crustaceorum Oniscodorum Latreilli. Bull. Soc. Imp. Nat. Moscou, 1833, vol. vi. pp. 71–193.
2. BUDDE-LUND, G.—Crustacea Isopoda Terrestria. Hauniæ, 1885.
3. ——— A Revision of "Crustacea Isopoda Terrestria." 1899–1904, pts. i.–iii., pp. 1–144, t. 1–10.
4. ——— Isopoda von Madagascar und Ostafrika. Voeltzkow, Reise in den Jahren 1903–1905, Bd. ii. pp. 265–308, t. 12–18. Stuttgart, 1908.
5. ——— Terrestrial Isopoda, particularly considered in relation to the Distribution of the Southern Indo-Pacific Species. Trans. Linn. Soc. Lond., Zool. ser. 2, vol. xv. 1912, pp. 367–394, pls. 20–22.
6. COLLINGE, WALTER E.—Contributions to a Knowledge of the Terrestrial Isopoda of India. Part I.—Rec. Indian Mus. 1915, vol. xi. pp. 143–151, pls. 4–12.
7. ——— Contributions to a Knowledge of the Terrestrial Isopoda of Natal.—Part I. Ann. Natal Mus. vol. iii. 1917, pp. 567–585, pls. 40–42.
8. DOLLFUS, A.—Sur quelques Isopodes du Musée de Leyde. Notes fr. Leyden Mus. vol. xi. 1889, pp. 91–94, t. 5.



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9. DOLLFUS, A.—Isopodes terrestres recueillies à Diégo-Suarez, à Tamatave et à la Réunion. *Mém. Soc. Zool. France*, 1895, T. viii. pp. 180–188, figs. 1–12.
10. ——— Voyage de M. E. Simon dans l’Afrique australe. *Ibid.* pp. 345–352, figs. 1–9.

EXPLANATION OF PLATE 9.

Illustrating Dr. Walter E. Collinge’s paper “On Two new Terrestrial Isopods from Madagascar.”

- Fig. 1. Dorsal view of *Alloniscus nacreus*, sp. nov. $\times 3$.
2. „ „ the cephalon. $\times 12$.
3. Anterior view of the cephalon. $\times 12$.
4. Left antennule. $\times 50$.
5. Right antenna. $\times 25$.
6. Terminal portion of the inner lobe of the left 1st maxilla, ventral view. $\times 80$.
7. „ „ left 2nd maxilla, ventral view. $\times 80$.
8. „ „ right maxillipede, ventral view. $\times 80$.
9. Second thoracic appendage, dorsal view. $\times 25$.
10. Ventral surface of the terminal portion of the 2nd thoracic appendage, showing spinous area. $\times 25$.
11. Dorsal view of the right uropod. $\times 25$.
12. „ „ the telson and last metastomatic segment. $\times 10$.
13. Dorsal view of *Calmanesia methueni*, gen. et sp. nov. $\times 6$.
14. „ „ the cephalon. $\times 20$.
15. Anterior view of the cephalon. $\times 20$.
16. Left antennule. $\times 80$.
17. Right antenna. $\times 20$.
18. Terminal portion of the inner and outer lobes of the right 1st maxilla, ventral view. $\times 80$.
19. Terminal portion of the right maxillipede, ventral view. $\times 75$.
20. Second thoracic appendage, dorsal view. $\times 20$.
21. Jointed spine from off the mesosome. $\times 20$.
22. Portion of same, showing the scales. $\times 80$.
23. a-d. Stages in the development of one of the jointed spines.
24. Dorsal view of the right uropod. $\times 50$.
25. Terminal segment of the metasome and telson, seen from the anterior. $\times 20$.

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